

**WHAT IS CLAIMED IS:**

1. A method for providing a transmission discovery in an Ethernet passive optical network comprising an optical line termination (OLT) connected by an optical fiber to a plurality of optical network units (ONUs), the method comprising the steps of:
  - the OLT assigning identifications for each of the plurality of ONUs according to a registration request received from the plurality of ONUs;
  - the OLT transmitting an OAM capability information message to the registered ONUs according to a registration sequence; and
- 10 the OLT receiving an OAM capability information messages from each of the ONUs having received the OAM capability information message.
2. The method as claimed in claim 1, further comprising the step of the OLT transmitting an OAM capability discovery completion message to the plurality of ONUs if the OAM capability information messages are received from the plurality of ONUs.
- 15 3. The method as claimed in claim 1, wherein the OAM capability information messages further includes a first field for storing a static allocated bandwidth information and a second field for storing information regarding a network topology.

4. A method for providing a transmission discovery in an Ethernet passive optical network comprising an optical line termination (OLT) connected by an optical fiber to a plurality of optical network units (ONUs), the method comprising the steps of:

the OLT assigning identifications for each of the plurality of ONUs according to a  
5 registration request from the plurality of ONUs;

the OLT transmitting an OAM capability information messages to the registered plurality of ONUs according to a registration sequence and waiting for the reception of the OAM capability information messages from the ONUs for a first predetermined time period; and

10 transmitting the OAM capability information messages of the ONUs to the OLT and waiting for the reception of the OAM capability discovery completion message transmitted from the OLT for a second predetermined time period.

5. The method as claimed in claim 4, further comprising the step of the OLT  
15 transmitting to the ONUs an OAM capability discovery completion message during the first predetermined time period.

6. The method as claimed in claim 4, further comprising the step of the OLT  
retransmitting to the ONUs the OAM capability information messages if the OAM  
20 capability information messages are not received with the first predetermined time period.

7. The method as claimed in claim 4, further comprising the step of the OLT retransmitting to the OLT the OAM capability information messages if the OAM capability information messages are not received within the second predetermined time period.

5           8. The method as claimed in claim 4, wherein the OAM capability information messages further includes a first field for storing a static allocated bandwidth information and a second field for storing information regarding a network topology.